

# WATERSHED URMP

## FOR THE TIJUANA RIVER WATERSHED

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### INTRODUCTION AND WATERSHED DESCRIPTION

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#### 1. PROGRAM FRAMEWORK



This Watershed Urban Runoff Management Program for the Tijuana River Watershed (Tijuana River Watershed URMP) has been prepared in partial fulfillment of the requirements under the National Pollution Discharge Elimination System Municipal Storm Water Municipal Permit (Municipal Permit), which was issued by the San Diego Regional Water Quality Control Board under Order Number 2001-01 to the County of San Diego, the 18 incorporated cities within the County of San Diego, and the San Diego Unified Port District for their urban runoff discharges. The City of Imperial Beach, City of San Diego and the County of San Diego (hereinafter Tijuana River Watershed Copermittees) have prepared the Tijuana River Watershed URMP in order to address the requirements under Sections J, K, and L of the Municipal Permit.

This document describes the activities and requirements that the Tijuana River Watershed Copermittees have or will implement. More importantly, this document describes the collaborative plans and efforts to reduce the impacts of urban activity on receiving water quality within the Tijuana River Watershed boundaries to the maximum extent practicable. This Watershed Urban Runoff Management Program for the Tijuana River watershed includes material that describes the Tijuana River Watershed Copermittees' intended approach to meeting their watershed-related Municipal Permit obligations as specified under Sections J, K and L of the Municipal Permit. This material is submitted pursuant to the Municipal Permit, and is subject to Section R.2 of the Municipal Permit concerning enforceability. This document also includes material describing the Tijuana River Watershed Copermittees' plans to go beyond the requirements of the Municipal Permit. This additional material is provided for information only and is not submitted pursuant to the Municipal Permit. These two kinds of material are interwoven in this document.

The Tijuana River Watershed URMP has been developed and authored by the Tijuana River Watershed Copermittees with stakeholder input and participation and is based upon the Model Watershed URMP documents prepared by the various Copermittee/Project Clean Water working groups to ensure regional consistency, but has been tailored specifically to the Tijuana River watershed. The document is divided into three chapters (Introduction and Watershed Description, Water Quality Assessment and Plan of Action), with each chapter further divided into sections. The following briefly summarizes the contents of each section of the document:

*Section 1:* This section provides a brief introduction to the Tijuana River Watershed URMP, the plan organization, regulatory background, the

goals and objectives of the Tijuana River Watershed URMP, and regulatory requirements of the Municipal Permit.

- Section 2:* This section provides a description of the Tijuana River watershed including the topographical and drainage features, the jurisdictions encompassed by the various water bodies throughout, and the types of land uses within this watershed.
- Sections 3 & 4:* These sections are fundamental components of the watershed program and include first year assessment of the water quality at the watershed level and identification and prioritization of related issues.
- Section 5:* This section describes the short and long-term activities to be conducted by the Tijuana River Watershed Copermittees to facilitate efforts in improving water quality.
- Section 6:* This section describes the existing framework and methods used in making land use planning decisions within the jurisdiction. This section also discusses the dependence of successful Tijuana River Watershed URMP efforts on collaborative inter-jurisdictional land use planning.
- Section 7:* This section introduces mechanisms that help facilitate public participation within the Tijuana River watershed.
- Section 8:* This section describes the educational and public outreach efforts that are ongoing and required to ensure that all stakeholders are informed and encouraged to ultimately integrate their activities into a watershed-approach for improving water quality.
- Section 9:* This section summarizes the goals and objectives of the Tijuana River Watershed URMP and defines how achievement of these goals and objectives will be measured.
- Section 10:* This section provides the summary and conclusions of the Tijuana River Watershed URMP.

**1.a. Background<sup>1</sup>**

The Federal Clean Water Act was amended in 1987 to address urban runoff. Municipalities throughout the United States were directed to obtain National Pollutant Discharge Elimination System (NPDES) permits for discharges of urban runoff from their municipal separate storm sewer systems (MS4s) by specified dates. In response to the Clean Water Act amendment (and the pending federal NPDES regulations which would implement the amendment), the San Diego Regional Water Quality Control Board (SDRWQCB) issued an “early” municipal storm water permit, Order No. 90-42, in July 1990 to various jurisdictions for their urban runoff discharges.

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<sup>1</sup> Source: San Diego Regional Water Quality Control Board (SDRWQCB) Fact Sheet/Technical Report For SDRWQCB Order No. 2001-01 Municipal Storm Water Permit For San Diego County And Cities. November 2001.

As the name implies, this “early” permit was issued prior to the November 1990 promulgation of the final federal storm water regulations. Although Order No. 90-42 contained the “essentials” of the then-proposed 1990 regulations, the requirements were written in very broad terms. This Order did not require watershed-based programs but did require some regional cooperation and consistency among the Tijuana River Watershed Copermittees.

Municipal Storm Water Permit Order No. 2001-01 (Municipal Permit) is the re-issuance of Order No. 90-42. The Municipal Permit address the basic requirement in federal law for a program that reduces pollutants discharged from municipal storm sewers to the maximum extent practicable, and also includes the specific program elements required by federal regulations. The Municipal Permit exceeds federal specification by also directing municipal storm water dischargers to meet water quality standards; by directing structural post-construction treatment best management practices (BMPs) of a specified size for new development and significant redevelopment without limitation by the MEP standard; and by directing the Tijuana River Watershed Copermittees to cooperate to develop watershed-based programs.

The Municipal Permit was issued to the following jurisdictions:

<i>City of Carlsbad</i>	<i>City of Imperial Beach</i>	<i>City of San Marcos</i>
<i>City of Chula Vista</i>	<i>City of La Mesa</i>	<i>City of Santee</i>
<i>City of Coronado</i>	<i>City of Lemon Grove</i>	<i>City of Solana Beach</i>
<i>City of Del Mar</i>	<i>City of National City</i>	<i>City of Vista</i>
<i>City of El Cajon</i>	<i>City of Oceanside</i>	<i>County of San Diego</i>
<i>City of Encinitas</i>	<i>City of Poway</i>	<i>Unified Port District</i>
<i>City of Escondido</i>	<i>City of San Diego</i>	

Under the Municipal Permit, each Copermittee is required to address the following principal elements:

- Establish and maintain adequate legal authority to control pollutant discharges into and from its municipal separate storm sewer systems;
- Develop and implement a Jurisdictional Urban Runoff Management Program, which will reduce discharges of pollutants and runoff flow during each major phase of urban development (i.e., planning, construction, and use or operation phases) within its jurisdiction;
- Collaborate with other Tijuana River Watershed Copermittees within its watershed(s) to develop and implement a Watershed Urban Runoff Management Program, which will identify and address the highest priority water quality issues/pollutants in their respective watershed(s);
- Collaborate with all other Tijuana River Watershed Copermittees to address common issues, promote consistency, and plan and coordinate urban runoff activities;

- Develop and implement a Receiving Waters Monitoring Program, which shall focus on the collection of monitoring data to be used for the achievement of water quality policies and the protection of beneficial uses; and,
- Submit various reports describing the measures it is undertaking to meet the requirements of the Municipal Permit.

**1.b. Watershed URMP Goals and Objectives**

In broad terms, the overall purpose of the Tijuana River Watershed URMP is to address the water quality issues and any degradation ongoing within the Tijuana River Watershed. Fundamental to both establishing specific Tijuana River Watershed URMP goals and measuring achievement, is the understanding that long-term solutions to water quality issues will be more effective if the issues are correctly and comprehensively identified and characterized. Based upon the proper identification and targeted characterization, true “watershed-approach” solutions can in fact then be applied.

In order for a plan to be successful, clear goals and objectives must first be established, agreed to and implemented by the Tijuana River Watershed Copermittees. Otherwise, program activities and tasks are adopted without an understandable purpose or clear direction. The following provides the program goal of the Watershed URMP and specific objectives that the Tijuana River Watershed Copermittees will strive to meet as part of this effort.

**PROGRAM GOAL**

**TO POSITIVELY AFFECT THE WATER QUALITY OF THE TIJUANA RIVER WATERSHED WHILE BALANCING ECONOMIC, SOCIAL AND ENVIRONMENTAL CONSTRAINTS.**

- Objective #1:      *Develop/expand methods to assess and improve water quality within the watershed.*
- Objective #2:      *Integrate watershed principles into land use planning.*
- Objective #3:      *Enhance public understanding of sources of water pollution within the watershed.*
- Objective #4:      *Encourage and enhance stakeholder involvement within the watershed.*

Further discussion on the justification, rationale and expected outcome for these policies (and associated tasks/activities) can be found in Section 9 (Program Effectiveness Strategy) of this document.

**1.c. Regulatory Requirements**

Urban runoff does not follow jurisdictional boundaries, and often travels through many jurisdictions while flowing to receiving waters. Therefore, the actions of various municipalities within a watershed regarding urban runoff can have a cumulative impact upon shared receiving waters. The Municipal Permit directs the Tijuana River Watershed Copermittees within each watershed to collaborate in developing and implementing a Watershed URMP for their watershed. The purpose of the Watershed URMP is to identify and address the highest priority water quality issues/pollutants in each watershed. Pursuant to Section J.2 of the Municipal Permit, as part of the Watershed URMP, the Tijuana River Watershed Copermittees are directed to:

- Map the watershed and identify all receiving waters, all impaired receiving waters, land uses, highways, jurisdictional boundaries, and prepare an inventory of all commercial, industrial, construction, municipal sites, and residential areas;
- Assess the water quality of all receiving waters in the watershed based on existing data, and transition from the existing county-wide based program to a watershed based monitoring program within the life of the current Municipal Permit;
- Identify and prioritize major water quality issues in the watershed caused or contributed to by discharges from municipal separate storm sewer system, including potential sources of the problems;
- Develop and implement a time schedule of activities needed to address the highest priority water quality issues;
- Identify the Copermittee responsible for implementing each recommended watershed activity;
- Develop and implement a mechanism for public participation in watershed activities;
- Develop and implement a watershed based education program; &
- Develop a strategy for assessing the effectiveness of the Watershed URMP.

Following the development and first year of implementation of the Watershed URMP, the Municipal Permit requires the submittal of an annual Watershed URMP report that documents the Tijuana River Watershed Copermittees' watershed activities during the preceding year. The Municipal Permit requires that the annual report include the following:

- A comprehensive description of all watershed activities conducted by the Copermittees for Municipal Permit compliance;

- Public participation mechanisms utilized during implementation;
- Watershed-based land use planning mechanism description;
- Effectiveness assessment of the Watershed URMP;
- A summary of watershed related data not already included in the annual monitoring report; and
- Identification of water quality improvements or degradation.

As identified under the Municipal Permit, the following Copermittees are located within the Tijuana River watershed:

**City of Imperial Beach**

**City of San Diego**

**County of San Diego**

The Municipal Permit also designates the lead Copermittee in the Tijuana River watershed to be the City of Imperial Beach, who has agreed to fill this role for the Tijuana River watershed.

## 2. WATERSHED DESCRIPTION



The Watershed URMP includes maps of the watershed that identify the following: All receiving waters (including the Pacific Ocean); Clean Water Act Section 303(d) impaired receiving waters (including the Pacific Ocean); Land Uses; MS4s; Major Highways and Jurisdictional Boundaries.

Most of this information can be found in Geographical Information System (GIS) maps, which are located in the pocket folder at the end of this document. Due to the limited time frame in which to complete this Tijuana River Watershed URMP, the attached maps are not entirely complete, as some of the information requested under the Municipal Permit is not readily available in a GIS format, specifically, a mapping of each jurisdictions municipal separate storm sewer system and the inventoried list of sources.

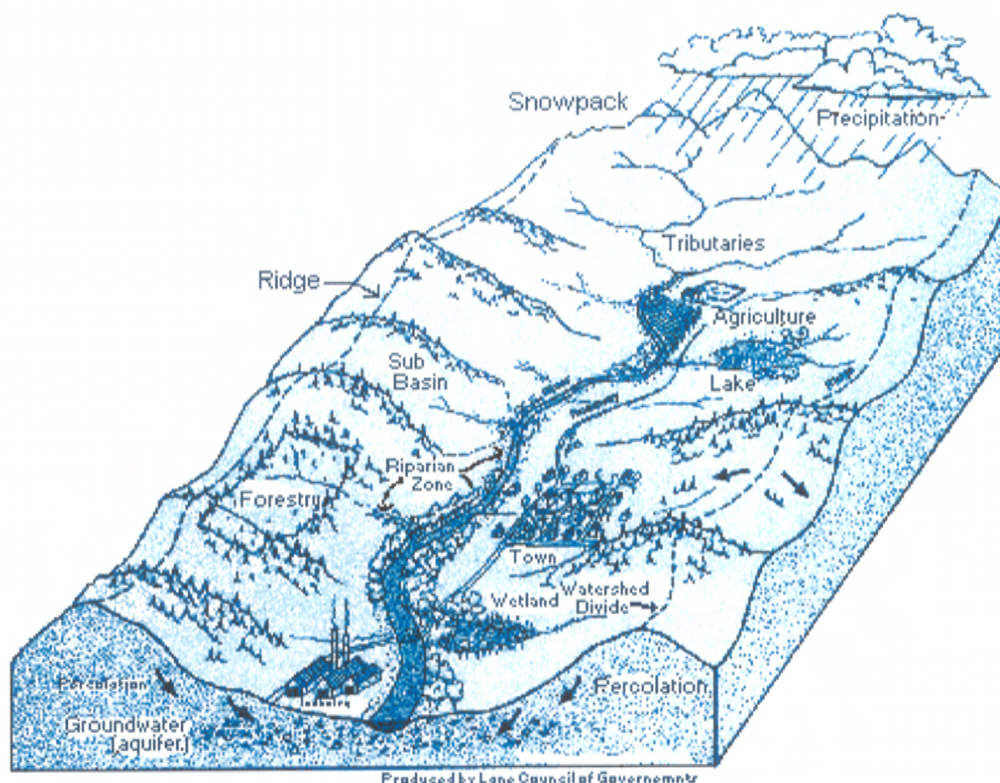
- MS4 Map. Regarding the mapping of the municipal separate storm sewer systems, the attached maps include current inventories for the City of Imperial Beach and County of San Diego. The information from the City of San Diego is based on the data currently available in digital form.
- Inventory Map. The Copermittees have developed a work plan that proposes to develop an accurate map that inventories commercial, construction, municipal and industrial facilities. The work plan is discussed in the Unified Watershed URMP.

### 2.a. Introduction to the Watershed

A watershed can be loosely defined as the area of land where surface water that is under it or drains off of it goes into the same place. The term is not restricted to surface water runoff and includes interactions with subsurface water.

Watersheds come in all shapes and sizes and cross-county, state and national boundaries<sup>2</sup>. Figure 2-1 is an example of a typical watershed.

**Figure 2-1: Typical Watershed<sup>3</sup>**



The Tijuana River watershed, which is also named the Cottonwood-Tijuana watershed, encompasses a region of approximately 1,750 square miles on either side of the California – Baja California border, and in terms of water quality is probably considered the most severely impacted watershed in San Diego County.<sup>4</sup> Portions of many jurisdictions with land use authority lie within the boundaries of the Tijuana River watershed. Specifically, the City of Imperial Beach, the City of San Diego, the County of San Diego and several Mexican municipalities.

The watershed consists of eight specific hydrologic units or “HU”s on the United States side of the border. Please refer to Table 2.1 and Figure 2-2 below for a breakdown of these HU’s and a map of the Tijuana River watershed.

<sup>2</sup> Environmental Protection Agency Website ([www.epa.gov/owow/watershed/whatis.html](http://www.epa.gov/owow/watershed/whatis.html)).

<sup>3</sup> Ibid.

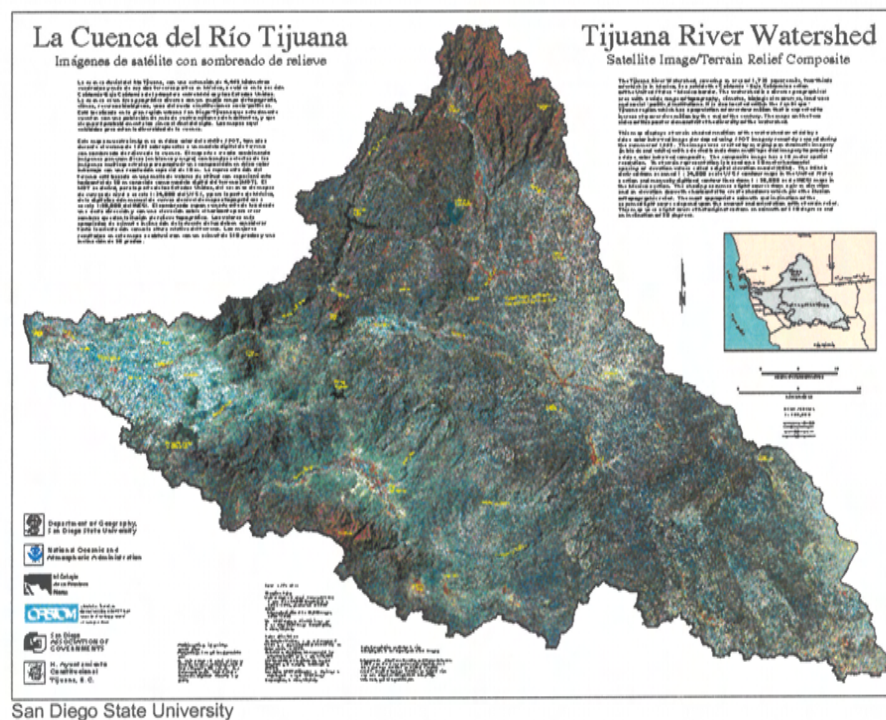
<sup>4</sup> Project Clean Water Website.

### Table 2-1: Hydrological Units

HYDROLOGIC AREA NAME	HYDROLOGIC AREA UNIT NUMBER
Tijuana Valley	911.1
Potrero	911.2
Barrett Lake	911.3
Monument	911.4
Morena	911.5
Cottonwood	911.6
Cameron	911.7
Campo	911.8

Although only 27% of the watershed land area is within California, the river discharges to the Tijuana Estuary and Pacific Ocean on the U.S. side of the international border. On the U.S. side of the border, the cities of Imperial Beach and San Diego, and San Diego County have portions of their jurisdictions within the watershed. The cities of Tijuana and Tecate are the most important urban centers on the Mexican side. The current population of the entire watershed is approximately one million people.<sup>5</sup>

**Figure 2-2: Tijuana River Watershed<sup>6</sup>**



The watershed is diverse geographically, with a wide range of physical and cultural environments. Land use varies from highly urbanized sections in the

<sup>5</sup> Project Clean Water

<sup>6</sup> San Diego State University

lower watershed to vast interior areas given to low intensity livestock grazing. Although most of the watershed is sparsely occupied, hardly any section of the watershed has not been impacted in some way by human activities. It also has the distinction of being located in the San Diego-Tijuana region, which has a population of approximately one million persons, and is thus the most populous section of the 2,000-mile US-Mexico border region. The growing metropolis puts stress on the watershed.<sup>7</sup> While the Mexican portion of the watershed is growing at more than six percent per year<sup>8</sup>, areas within San Diego County are also anticipated to grow rapidly. By sometime around 2015, it is estimated that the population within the watershed will double<sup>9</sup>.

Owing to its geological, topographical and climatological diversity, the watershed supports a wide variety of native plant communities. Vegetation types range in stature and elevation from sea level (e.g. coastal salt marsh and southern fore dunes) upwards to sierra mixed coniferous forest found in the highest northern portion of the watershed where precipitation is greatest. Coastal sage scrub is found almost entirely on lower-elevation slopes that occur in the western half of the watershed. It formerly covered the great bulk of the land in and around the City of Tijuana that is presently developed. Chaparral covers about 55 percent of the watershed and largely occurs above coastal sage scrub in the eastern half of the watershed. The watershed also contains several wetland and riparian vegetation types that serve as valuable habitat to a rich diversity of animal life.<sup>10</sup>

The Tijuana River watershed is classified as a Category I (impaired) watershed by the State Water Resources Control Board due to a wide variety of water quality issues. These problems are largely a result of point and non-point sources on both side of the border. The Tijuana Estuary, a National Estuarine Sanctuary that supports a variety of threatened and endangered plants and animals, is threatened by inflows from the Tijuana River containing high concentrations of coliform bacteria, sediment, trace metals (copper, lead, zinc, chromium, nickel, and cadmium), PCBs, and other urban, agricultural, and industrial pollutants.<sup>11</sup> Additional information on water quality can be found in Section 3 and 4 of this report.

## **2.b. Drainage**

The basin contains three surface water reservoirs, various flood control works, and a National Estuarine Sanctuary which is home to several endangered species and is protected by the U.S. federal government<sup>12</sup>. Approximately one third of the watershed is in the U.S. and two thirds is in Mexico. The upper portion of the watershed drains from the U.S. into Mexico and merges with a network of tributaries. The confluence of these tributaries ultimately forms the Tijuana River just outside the City of Tijuana. The Tijuana River flows in a

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<sup>7</sup> San Diego State University. National Spatial Data Infrastructure Demonstration Project, Final Report 2001

<sup>8</sup> Ganster, ed. 2000

<sup>9</sup> Wright and Garfield 1999

<sup>10</sup> Ibid.

<sup>11</sup> Project Clean Water

<sup>12</sup> SDSU, Use of Basins Model to Estimate Loading of Heavy Metals from the Binational Tijuana River Watershed, Watershed 2000 Specialty Conference, Water Environment Federation, Vancouver, July 2000

concrete channel through Tijuana and then continues in its natural riverbed back across the border to the U.S. Within the U.S., prior to its discharge to the Pacific Ocean, the river forms the Tijuana Estuary, a protected area containing one of the largest remaining functioning wetlands and one of the few salt marshes preserved in Southern California.<sup>13</sup>

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<sup>13</sup> San Diego State University. National Spatial Data Infrastructure Demonstration Project, Final Report 2001